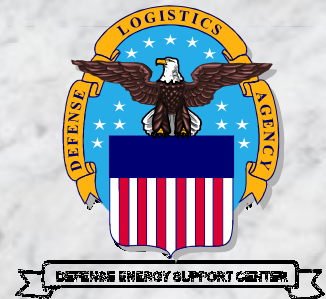


# *Norwalk Tank Farm Update*

*Defense Energy Support Center-  
Americas West  
Norwalk Tank Farm  
Restoration Advisory Board*

*January 31, 2008*



# Presentation Overview

- General Site Activities
- Remediation System Upgrade Summary
- Remediation System Performance Update
- Holifield Park Investigation Update
- 2<sup>nd</sup> Semiannual 2007 Groundwater Monitoring
- Conceptual Site Modeling Update
- Planned Activities

# General Site Activities

- Absorbent sock:
  - changed out (Oct 4, Oct. 31, Nov 9, Nov 15, Dec 4)
  - installed in GMW-04 (Oct 10)
  - installed in MW-09 (Oct 31)
- Weed abatement (began Oct 23)
- Purged total fluids from GMW-04 and MW-09 (Nov 15)
- Repair of air compressor (Dec 9)
- Repair of VW Easter Boundary SVE Line (Dec 10)
- Repair of Fence on North side (Excelsior St.) (Dec 26)

# General Site Activities – Weed Abatement



**Before**



**After**

# General Site Activities – Weed Abatement (continued)



**Before**



**After**

# General Site Activities – Weed Abatement (continued)



**Before**



**After**

# General Site Activities – Fence Repair



**Before**



**After**

# Remediation System Upgrade Summary

- Electrical connects to GW-13, GW-14, GW-15 (Oct 25)
- Problems with variable frequency drive were identified and corrected (Dec 15)
- Installed and hydrated carbon for new fiberglass cell (Dec 16)
- Transmitter and receivers for remote control of GW-13, GW-14, and GW-15 designed and built
- Procurement of level sensors for the air stripper, sump, and surge tank to replace malfunctioning equipment
- Procurement of air stripper cap



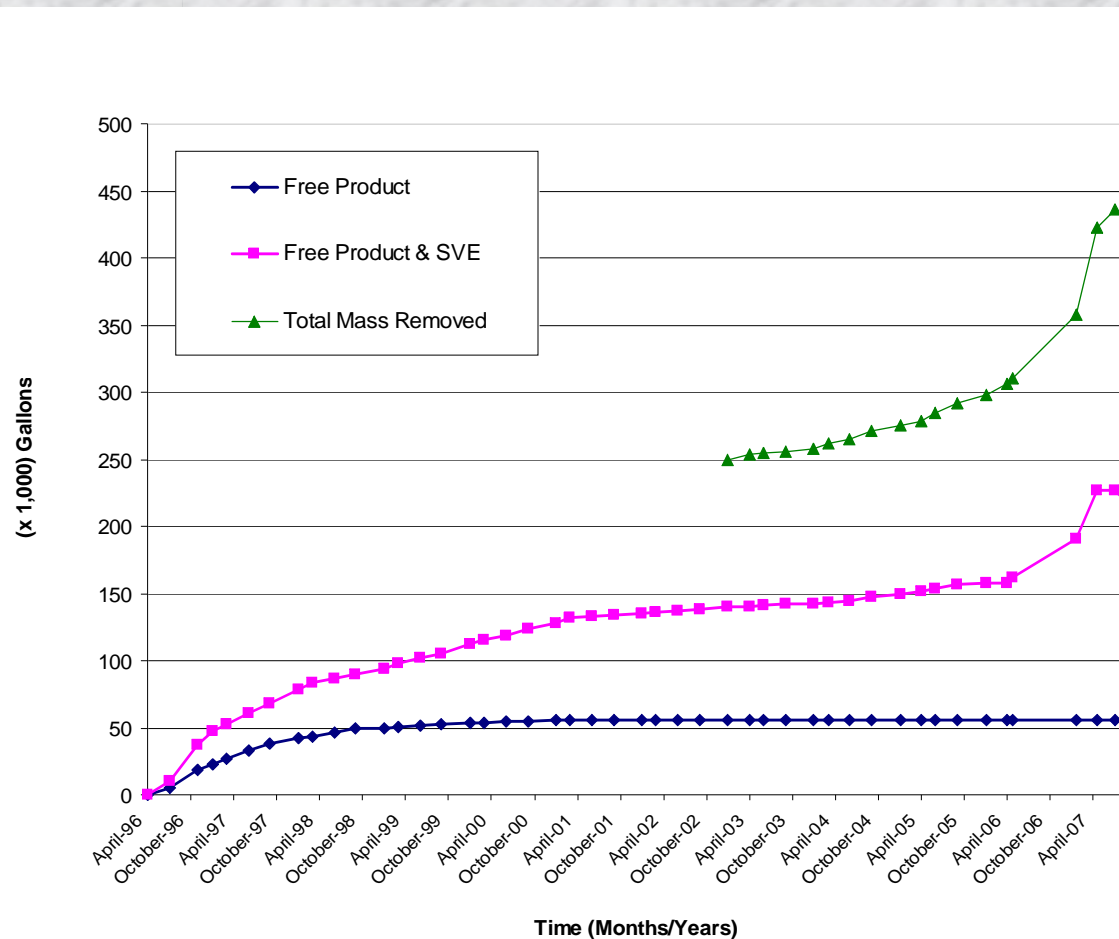
# Remediation System Performance Update

- System Performance since April 1996 through September 2007
  - Total Hydrocarbons Mass Removed: 427,017 gallons.
    - Approx. 215,183 gallons recycled and destroyed
    - Estimated 211,830 gallons of hydrocarbons destroyed due to enhanced biodegradation
  - 42.2 M gallons of water treated

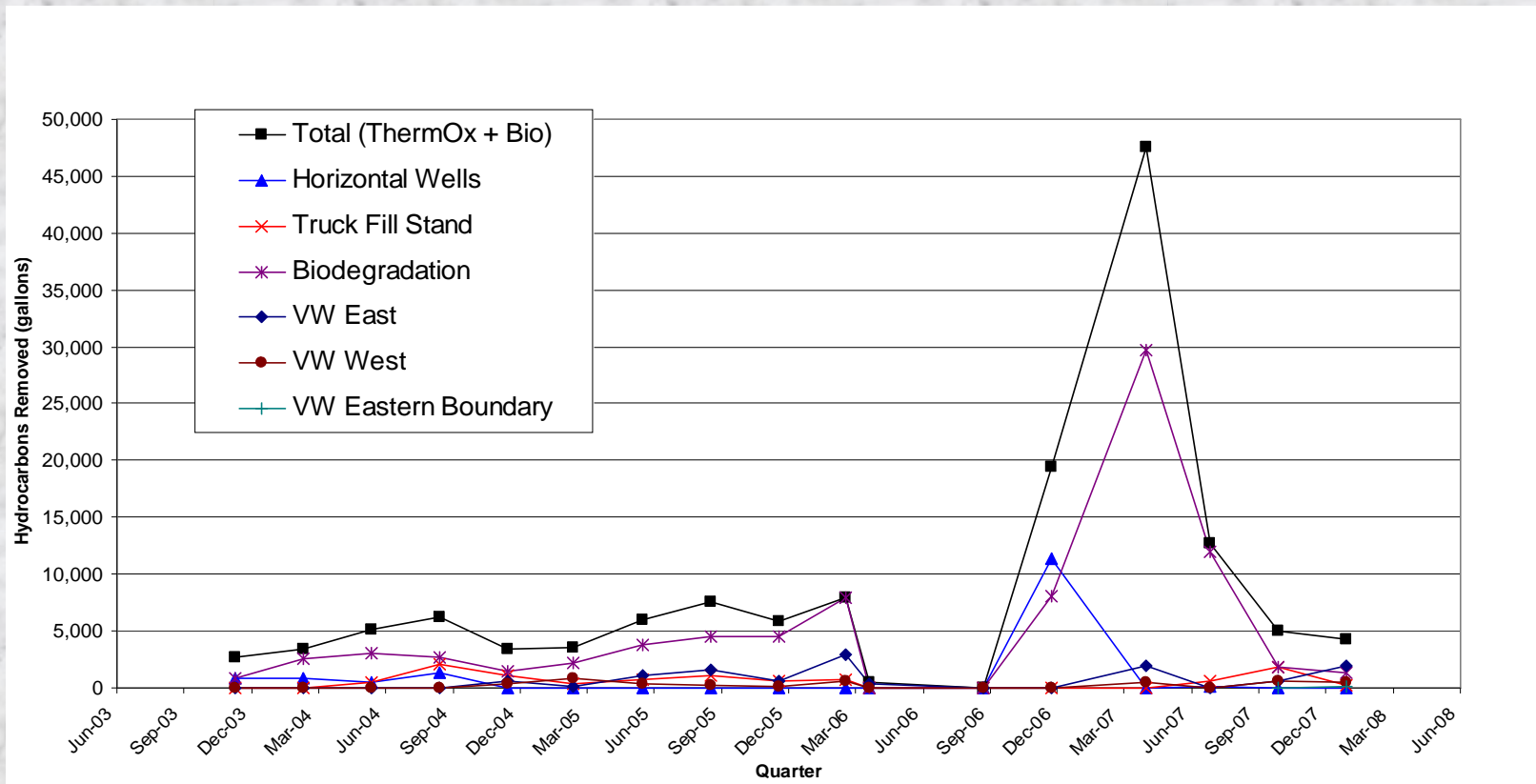
# Remediation System Performance Update (continued)

- Detailed breakdown of the 215,183 gallons that has been recycled and destroyed:
  - 55,555 gallons of free product recovered and recycled (including absorbent sock recovery)
  - 1,397 gallons of dissolved-phase hydrocarbons recovered and treated through onsite treatment system
  - 158,231 gallons of volatile hydrocarbons recovered through SVE and treated through onsite treatment system

# Remediation System Update – Hydrocarbon Mass Removal



# Remediation System Update – Hydrocarbon Mass Removal Soil Vapor Extraction System



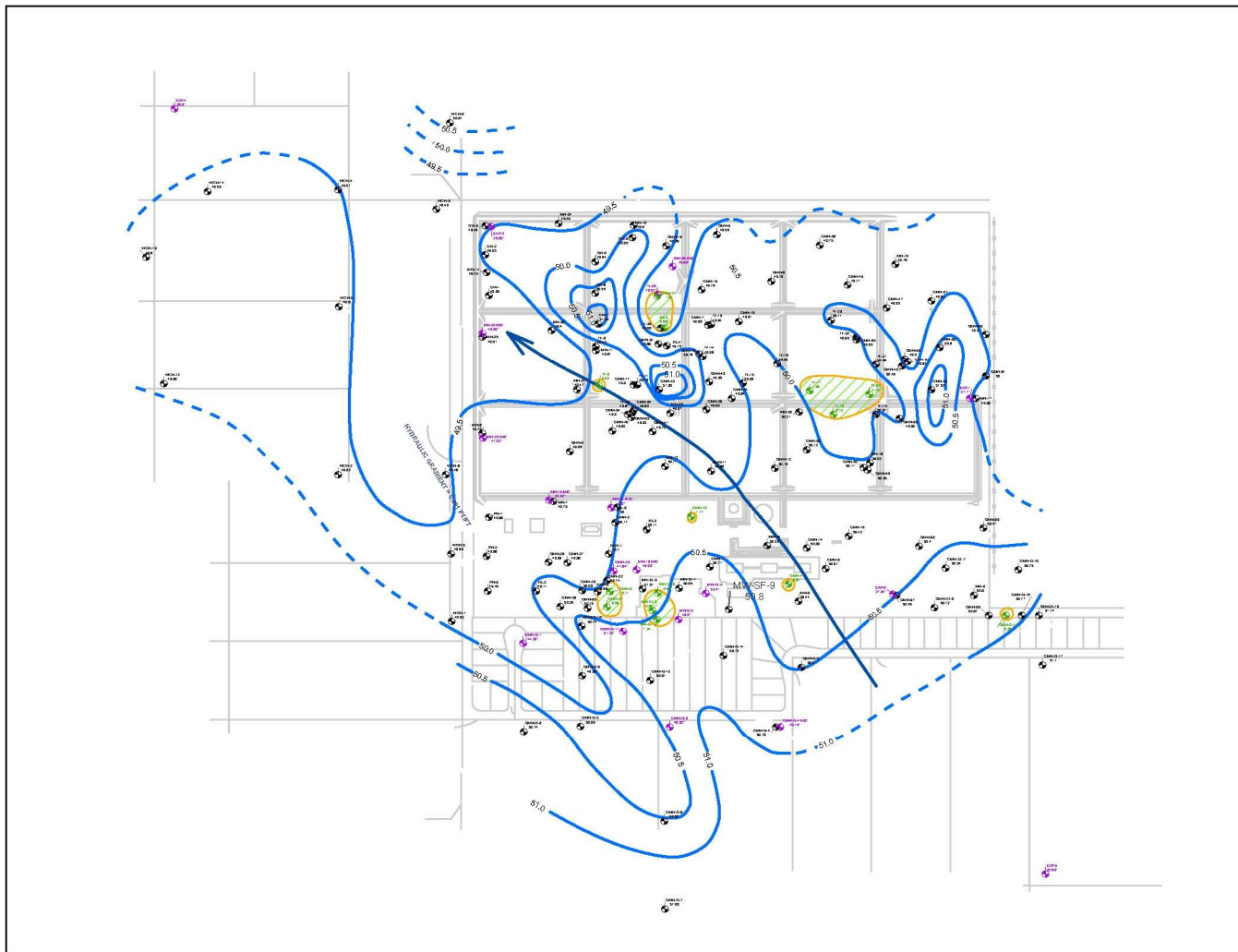
# Holifield Park Investigation Update

- Investigations conducted in December 2006 and June/July 2007
- **NO RISK TO PARK USERS**
- Final report submitted (Jan 10)
- Work plan submitted for additional investigation and to install a groundwater cleanup system (Jan 25)
- Once approval is received from the Water Board, investigation and system installation will commence

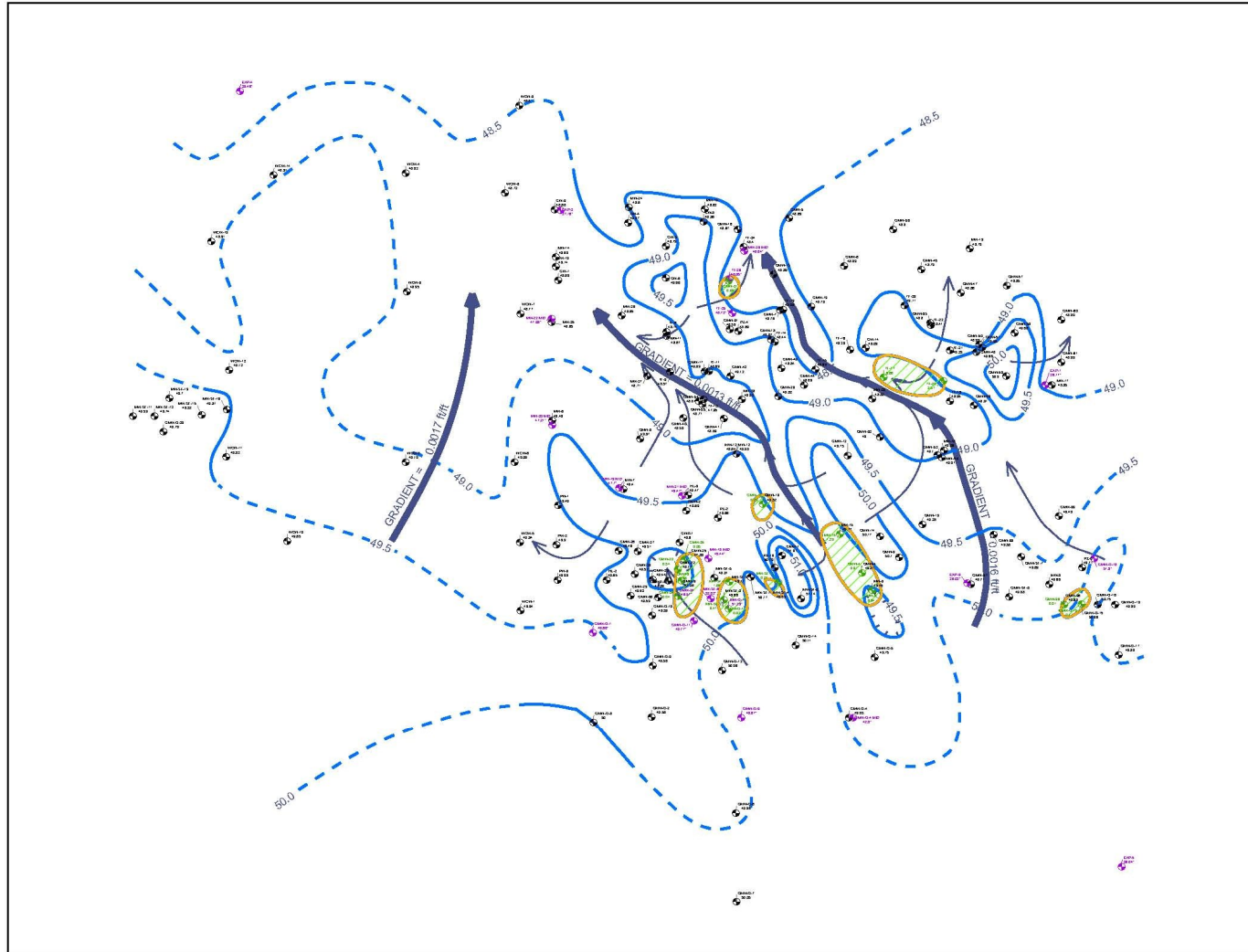
## 2<sup>nd</sup> Semiannual 2007 Groundwater Monitoring Event

- Generally, groundwater elevations and free product conditions were similar to those observed in May 2007
- Groundwater elevations during November 2007 were, on average, ~ 0.8 foot lower than May 2007
- Overall flow direction in the upper groundwater zone was to the northwest which is consistent with May 2007
- Lateral extent and concentrations of the dissolved-phase TPH, benzene, 1,2-DCA, and MTBE plumes were similar to those detected during May 2007
- TPH was detected in one well (EXP-3) in the Exposition Aquifer

# Groundwater Elevation and Free Product Plumes Second Semiannual 2007 Event November 2006

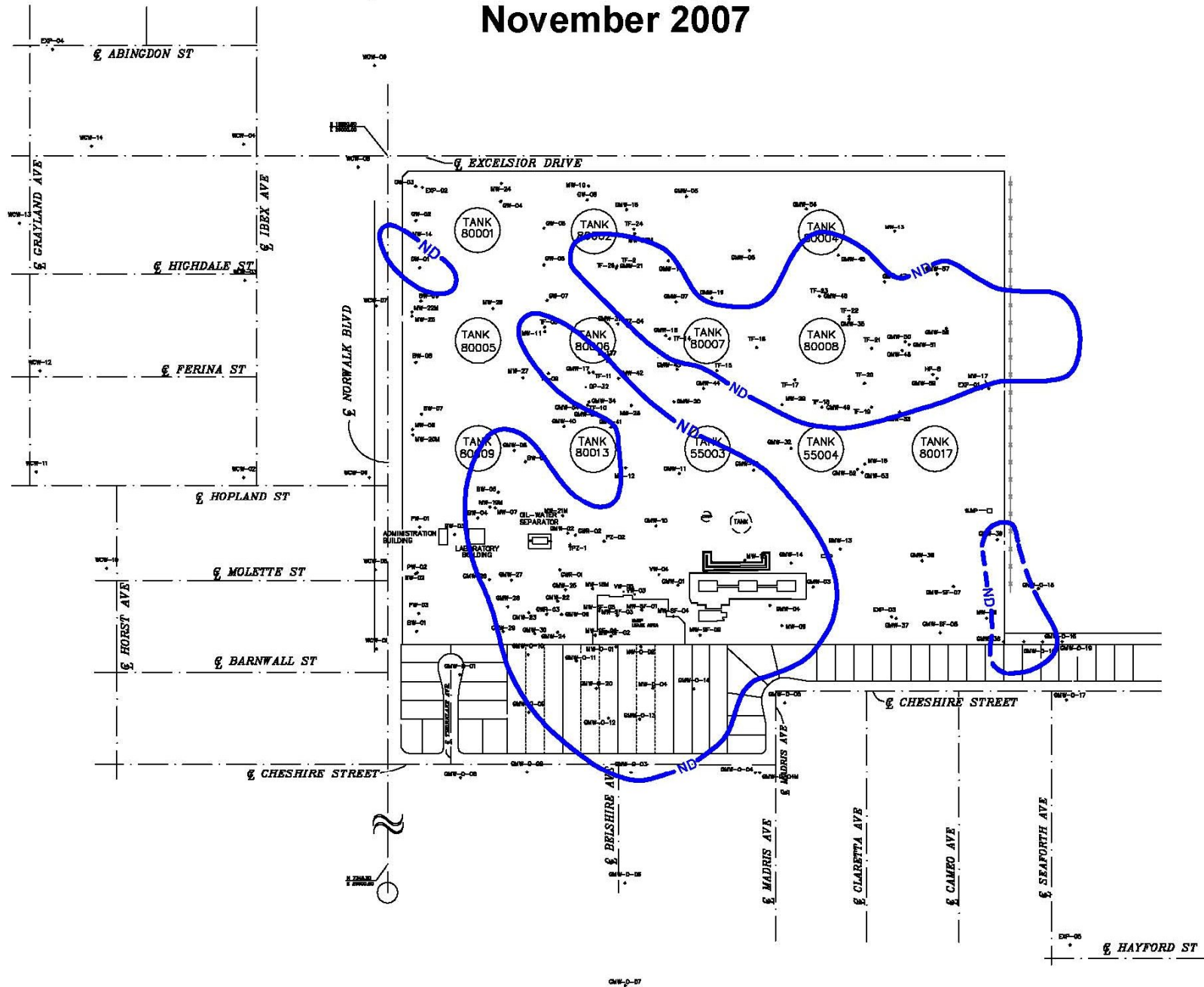


# Groundwater Elevation and Free Product Plumes Second Semiannual 2007 Event November 2007

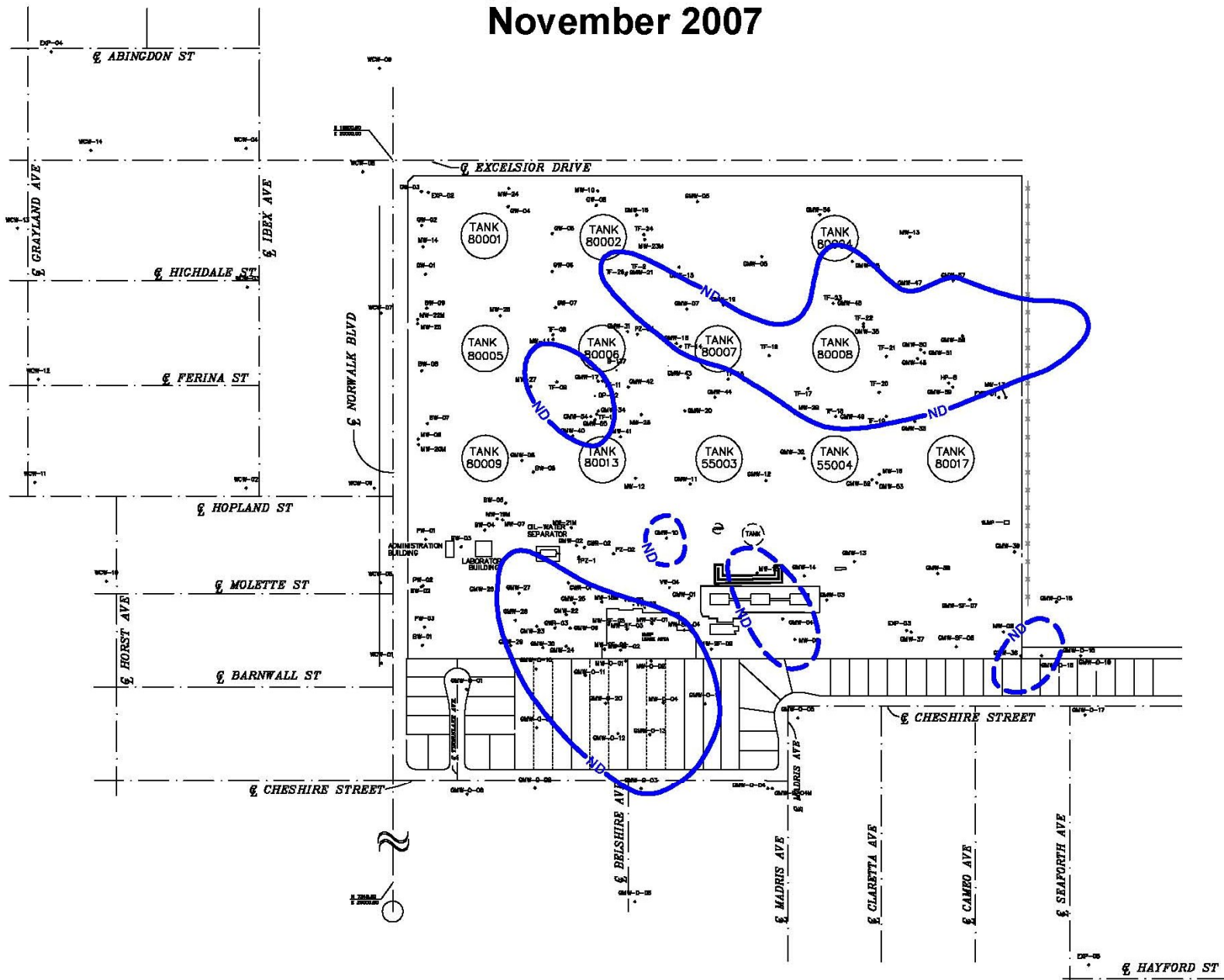




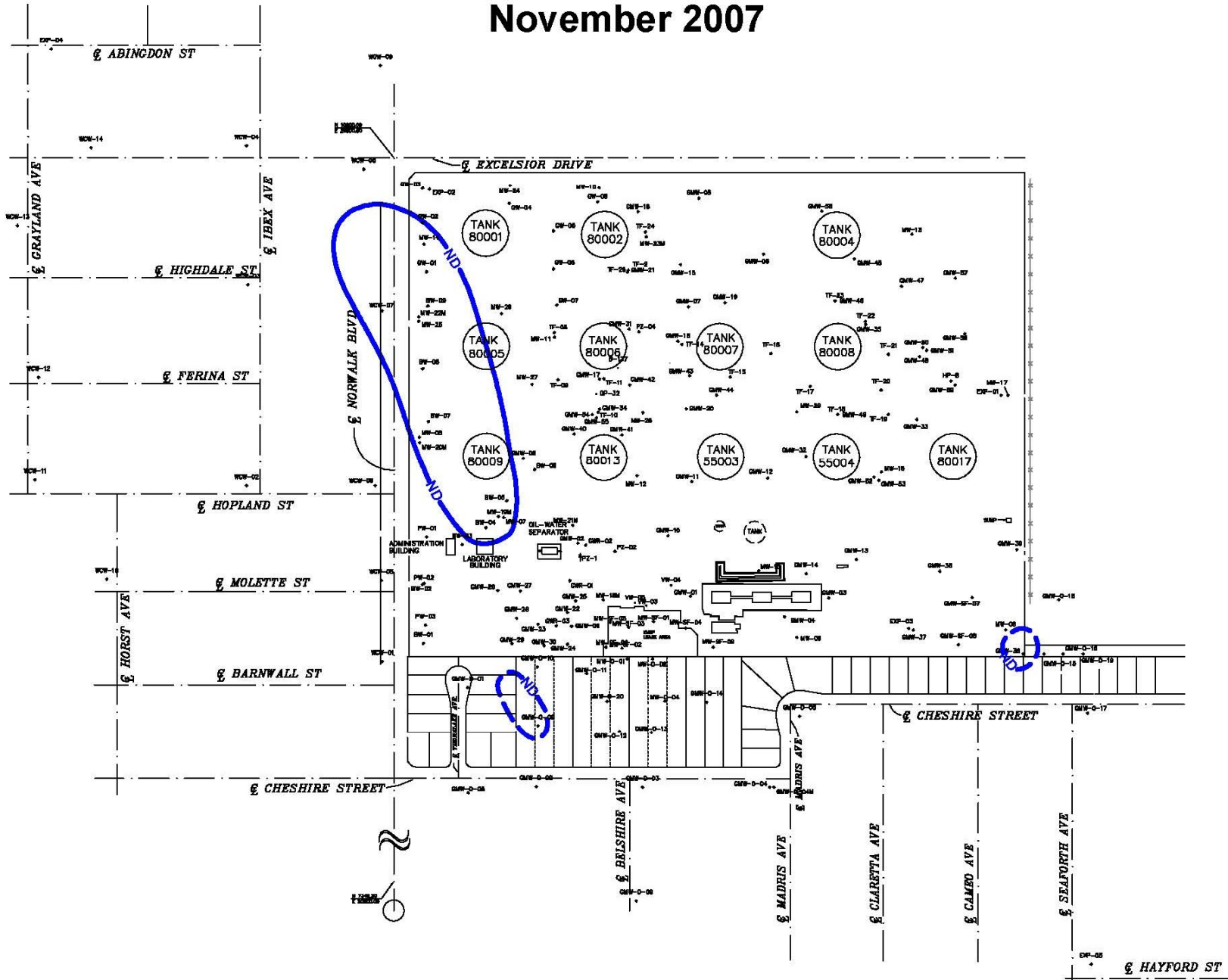
# Total Petroleum Hydrocarbons In Uppermost Groundwater Zone November 2007



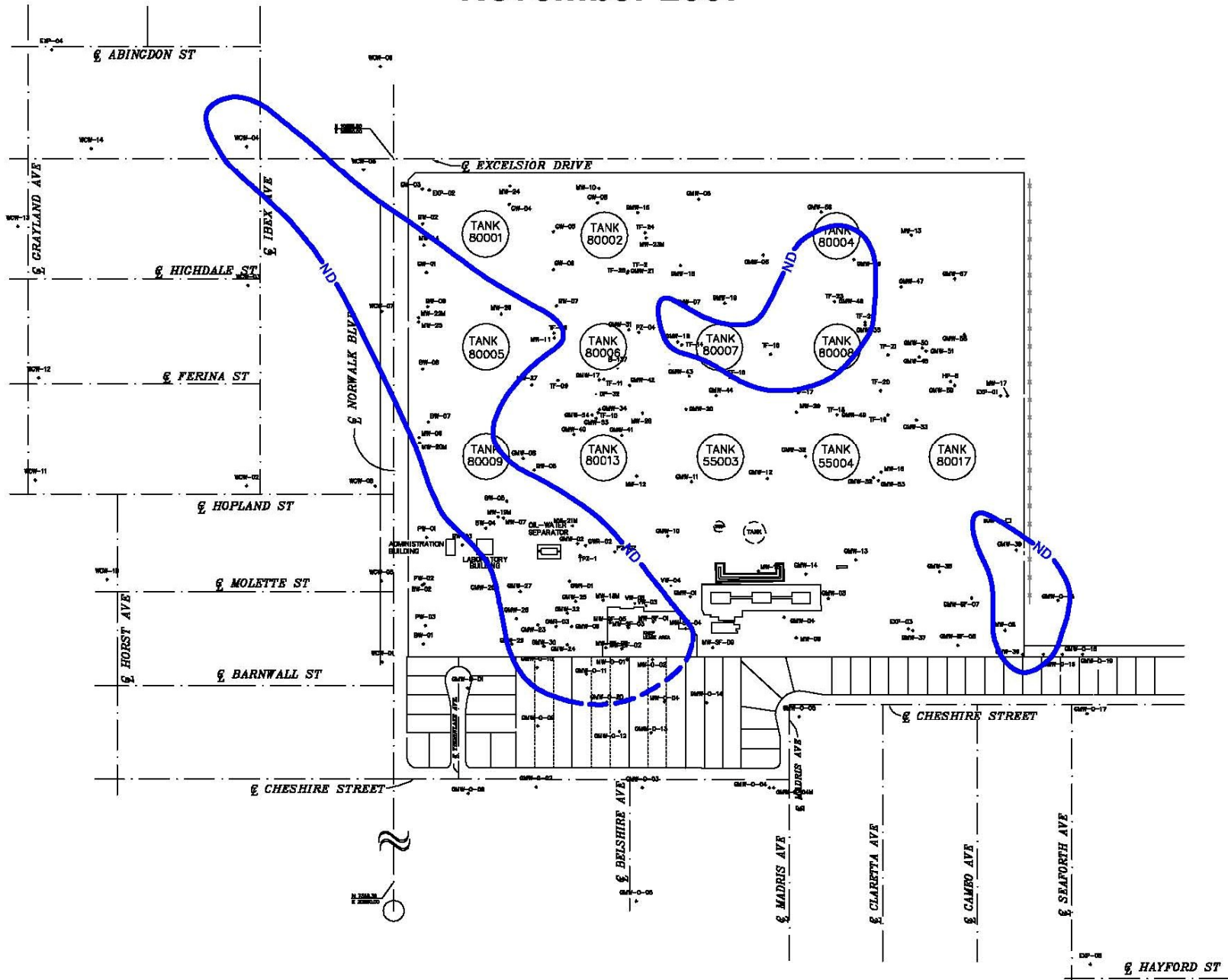
# Benzene In Uppermost Groundwater Zone November 2007



# 1,2-Dichloroethane In Uppermost Groundwater Zone November 2007



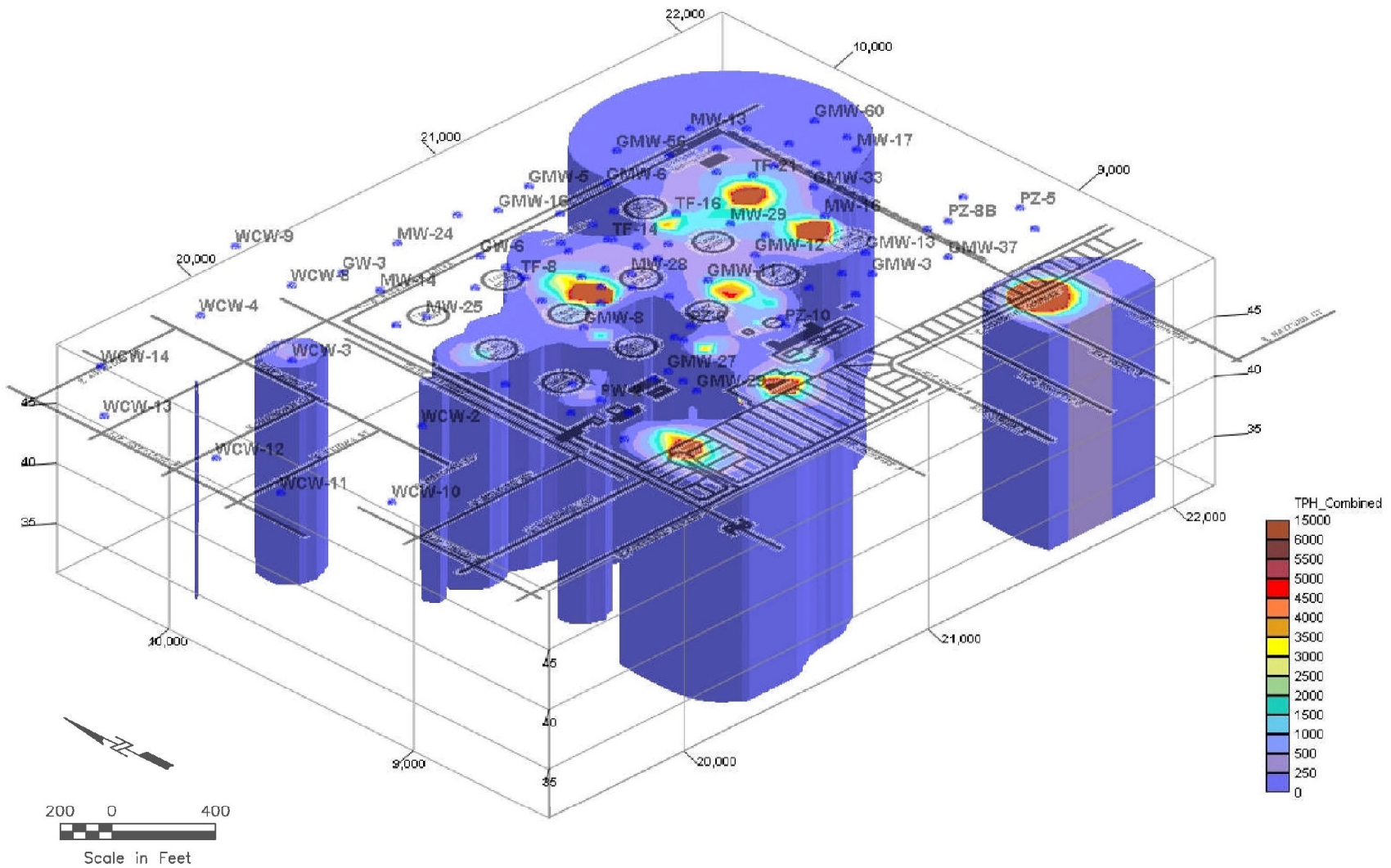
# Methyl tert-butyl ether In Uppermost Groundwater Zone November 2007



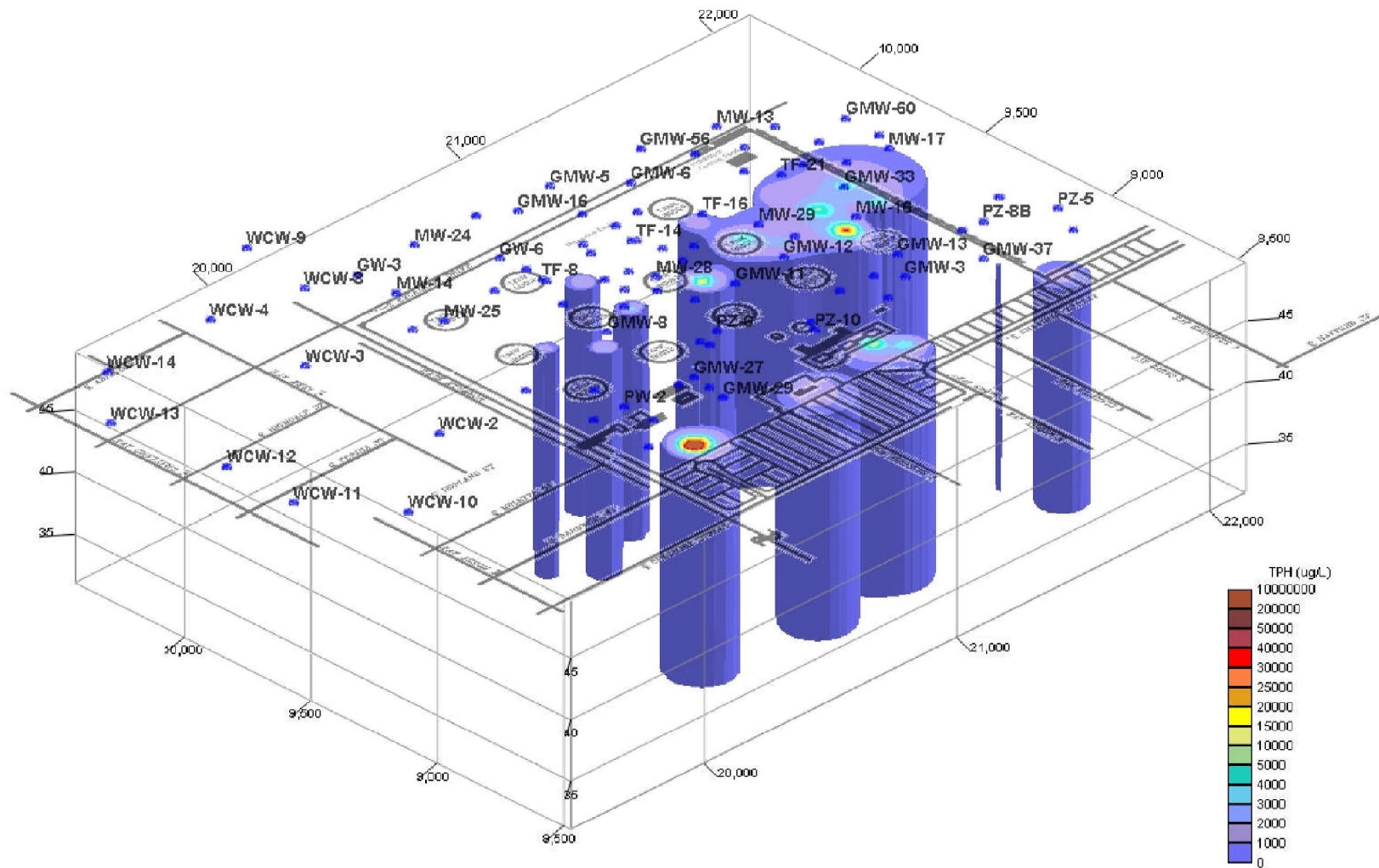
# Conceptual Site Modeling Update

- 3D models have been created for TPH and BTEX in the uppermost groundwater zone based on data from multiple years
- Models show distribution of TPH and BTEX concentration results for second semiannual event of 1996, 2000, 2003, and 2007
- Models demonstrate that plume size and TPH/BTEX concentrations have decreased over time due to remediation and natural attenuation

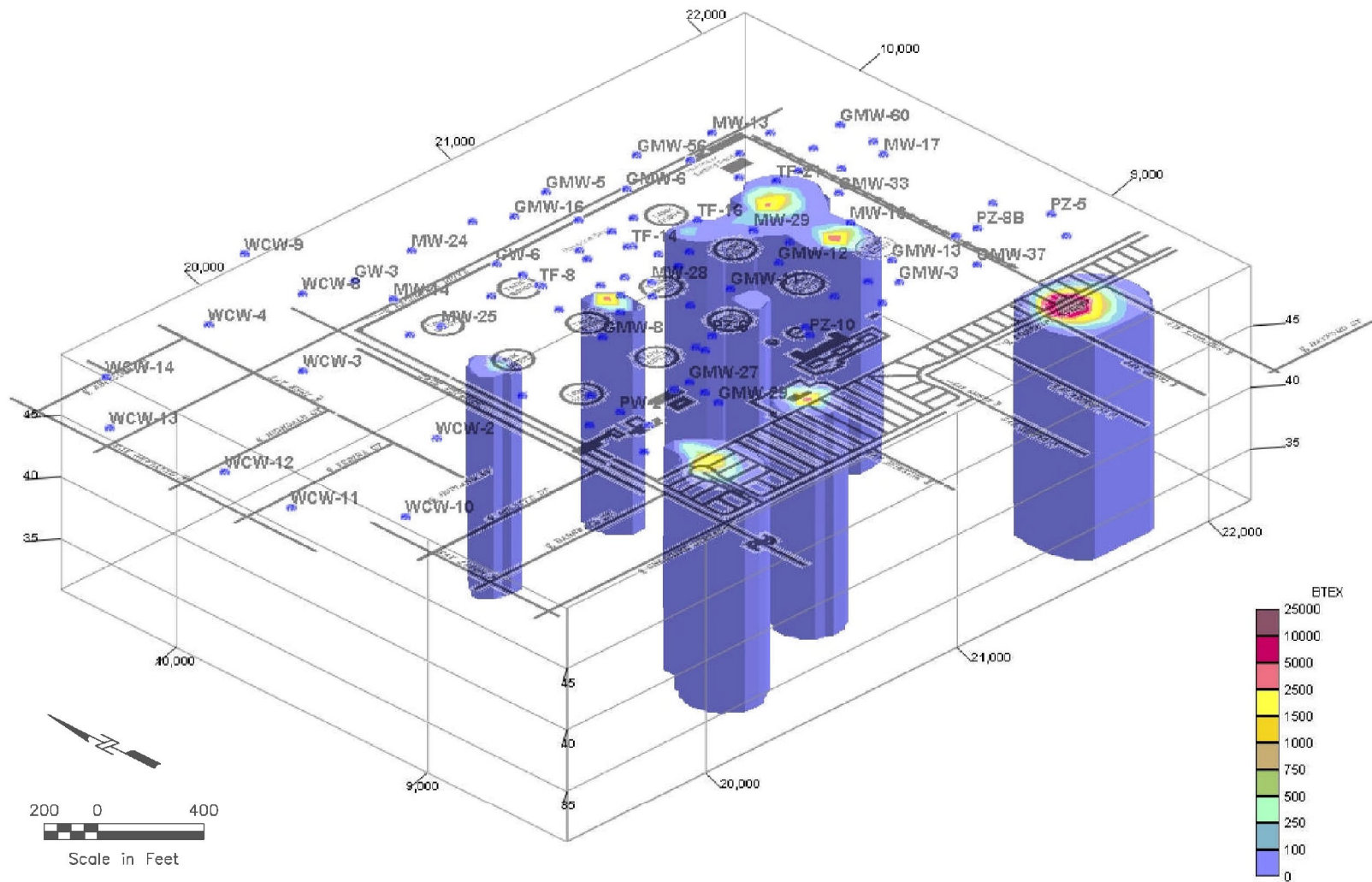
# Concentration of TPH in Uppermost Groundwater Zone November 2000 DESC Norwalk



# Concentration of TPH in Uppermost Groundwater Zone November 2007 DESC Norwalk

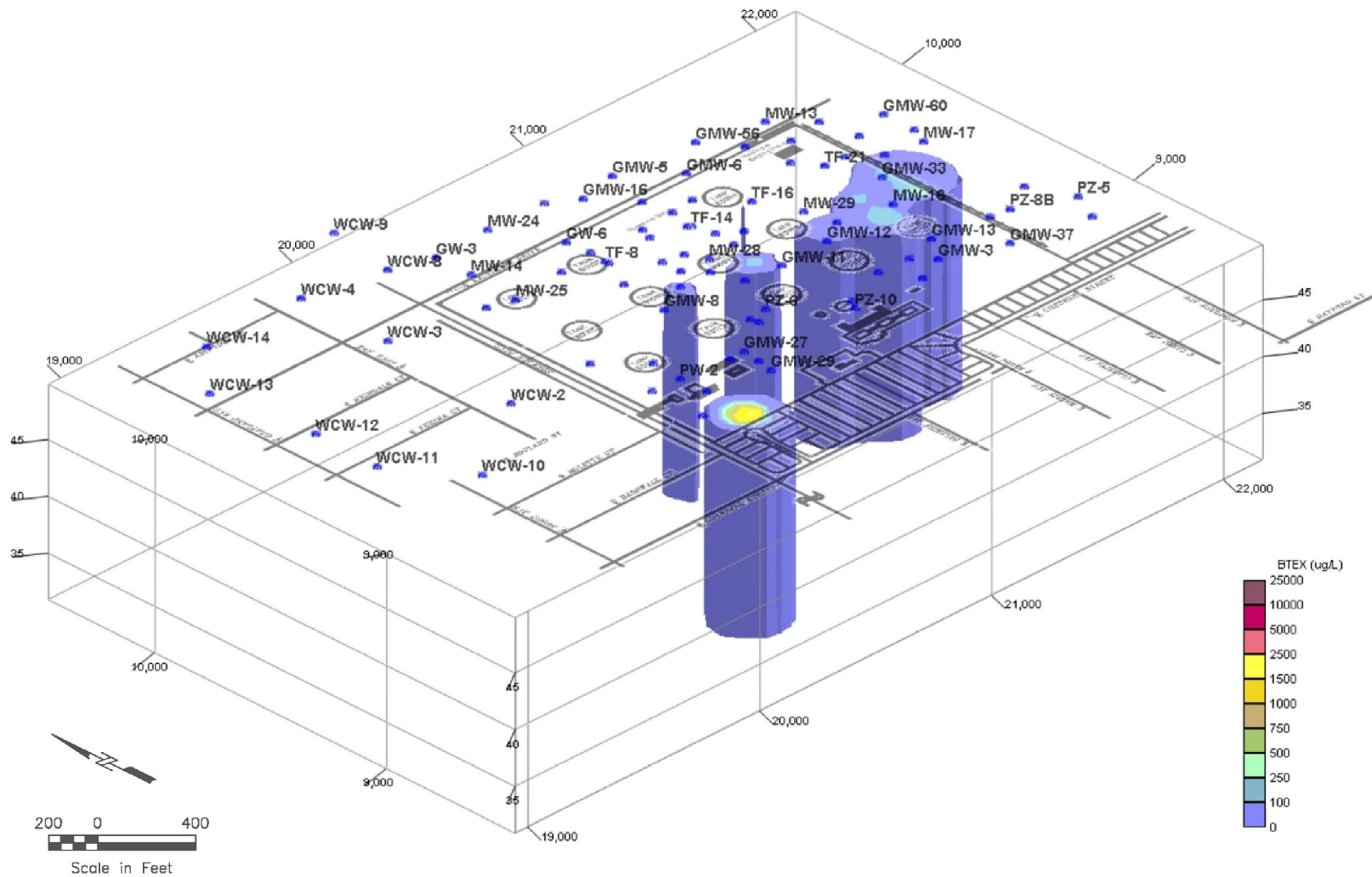


# Concentration of BTEX in Uppermost Groundwater Zone November 2000 DESC Norwalk





# Concentration of BTEX in Uppermost Groundwater Zone November 2007 DESC Norwalk



# Planned Activities

- Routine operation, maintenance, monitoring, and required sampling of the remediation system
- Installation of:
  - flow check valves at carbon vessels
  - flow switch at filters
  - transmitter and receivers
- Pipe network repairs
- Thermal oxidizer system evaluation

# Planned Activities (continued)

- Groundwater system expansion expected to be complete in February
- System start-up anticipated in February
- Additional groundwater investigation at Holifield Park
- Remediation system installation at Holifield Park to include additional monitoring wells along the school



# Discussion